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Ashland Industrial Services
Training. Inspections. Consulting. Project Management.

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100% FINAL ELEVATOR STUDY

FOR

ORVILLE WRIGHT
FEDERAL BUILDING DC0083ZZ
800 INDEPENDENCE AVE, SW
WASHINGTON, DC 20401-0001

December 30, 2016

SCOPE OF WORK

Ashland surveyed twenty (20) elevators and six (6) escalators at the referenced property during the week of October 17, 2016. The purpose of the audit and systems analysis is to develop scopes, cost estimates, time schedules, phasing for the interim repair projects and plan for the modernization projects. Ashland also identifies the primary equipment, determines the maintained condition of major components, records operating performance levels and evaluates the vertical transportation based on applicable industry and code standards.

Our report is arranged in sections as follows:

EXECUTIVE SUMMARY

The elevator equipment in the Orville Wright Building (FAA) was originally installed in 1962 by Westinghouse Elevator and was modernized in 1992-1993. The existing Swift 5000 elevator controllers of PE1 – PE16 are **OBSOLETE** by design with spare parts that only consist of rebuilt components. Technical support is limited to electrical prints that are located in each elevator machine room. Scarcity of spare replacement parts could lead to elevator down time for weeks if not months. The freight elevators, PE17 & FE18 also were modernized in 1992-93 with the same Swift 5000 elevator controllers and are **OBSOLETE,** as well. The hydraulic freight elevator FE19 & FE20 were modernized in 1993 with MCE controls which are no longer supported by the manufacturer and are **OBSOLETE**, as well. All freight elevators have Currion freight door equipment which is no longer made and the relay door controls are **OBSOLETE** by design. The building is also served by six (6) Westinghouse Modular B type escalators that are original as installed in 1962. These units are **OBSOLETE** by design and should be replaced as part of the elevator modernization project. FE19 & FE20 should be removed from service immediately due to the **OBSOLETE** hydraulic jack assemblies (single bottom construction) and replacement of these assemblies should be performed.

The Orville Wright Building is located at 800 Independence Ave, SW, Washington, DC, 20401. It is a government owned building. It is currently occupied entirely by the Federal Aviation Administration (FAA). General Services Administration (GSA) is responsible for the operations and maintenance of the building. The building has an area of 1,114,225 Gross SF, 847,391 Rentable SF and 637,240 Usable SF. The building has twelve (12) levels. These are B and A (parking levels) and floors 1 through 10. The building was built in 1962 and was designated as one of the modern era historic buildings.

Ashland Industrial Services performed a comprehensive survey of the elevator equipment at the referenced property during the week of October 17, 2016. The office building's vertical transportation is provided by two (2) passenger groups of eight (8) overhead gearless traction passenger elevators (PE1 – PE8 & PE9 – PE16). One passenger group is located on the West side of the building and the other passenger group is located on the East side of the building. The passenger elevators serve ten (10) front openings (1-10), have a capacity of 3,500 pounds and operate at 400 feet per minute with 2:1 roping. There are two (2), 6,000 pound capacity service/freight elevators (FE17 & FE18) located on the East side of the building that serve ten (10) landings (FE18) and twelve (12) landings (FE17), respectively, with FE17 serving the parking garage levels "A" & "B". The building is also served by two (2), 5,000 pound capacity, two (2) stop direct lift hydraulic service/freight elevator (FE19 & FE20) that serve the first and second floors of the building and are located on the West side of the building. The building is also served by six (6) Westinghouse Modular B type escalators with 24 inch wide steps and are original to the building (1962). A pair of escalators serves parking levels "B" to "A", "A" to "1" and one office level "1" to "2".

Realizing that preventive maintenance is an ongoing process, Ashland's survey represents a snap shot on a specific day and time. Overall, the equipment is in good condition with evidence of preventive maintenance being performed on a regular basis. The machine room spaces are clean and the areas are

organized. The deficiencies found can be addressed during regular preventive maintenance component replacement procedures such as replacing worn car door gibs and replacement of the incandescent bulbs utilized in the operating fixtures.

Of particular concern is that Ashland found outdated paperwork in each elevator machine room that illustrates that the annual no-load safety tests, as required by ASME A17.1 Code, have not been completed since July 2014 for all traction elevators and December 2014 for FE19. FE20 requires a new test tag since the control valve was replaced and the unit was tested in July 2016. These tests should be scheduled and completed as soon as possible. Record keeping of maintenance procedures and fireman's service monthly testing is not current or in some cases completely missing. The escalator testing paperwork could not be located so confirmation of when and what type of tests were performed on the escalators could not be determined. The car door restrictor devices on the some of the passenger elevators need to be repaired for proper operation, as well, and represent a safety concern.

The elevator control equipment for all elevators in the Orville Building are obsolete by design, with parts availability of the Swift-5000 control system an inherent problem and the MCE system no longer being supported by the manufacturer. MCE is still in business and is a very successful third party, non-proprietary elevator control manufacturer based in California. Computerized Elevator Controls (CEC), manufacturer of the Swift Controls, was purchased by ThyssenKrupp Elevator (TKE) more than ten (10) years ago and there is no technical support for the product provided by TKE. CEC was closed not long after TKE's purchase.

Ashland recommends that all elevator controls be budgeted for replacement within the next 1-2 years due to lack of spare parts and availability of technical support. Elevator control upgrades would also include the installation of "rope grippers" to prevent unintended movement in the "up" direction. This is a safety feature that the current elevator controllers and machines do not have and newly installed equipment would meet the latest ASME A17.1 Code requirements. Since the elevator controls were modernized back in 1992-1993, the building related work required by Code when an elevator controller is replaced with new, should be minimal. The freight elevator power operated, bi-parting door controls should also be replaced on FE17, FE18, FE19 & FE20, along with worn door operating components including door motors, chains, door panels, etc.

The passenger elevators Westinghouse gearless traction machines of PE1 – PE16 are operating as designed and are original to the building making them 54+ years old. Ashland recommends completing an electrical evaluation of each DC hoist motor and making repairs where necessary to return each machine to like new condition.

Any elevator hydraulic jack assembly that has been installed prior to 1972 was constructed utilizing a single bottom bulk head design. As a result of the installation date of 1962, the hydraulic freight elevators FE19 & FE20 will require a complete hydraulic jack replacement. Ashland recommends that the elevators be immediately removed from service and the hydraulic jacks be replaced. The new jack will be encased in a PVC liner or another means to protect from moisture and electrolysis, per ASME A17.1

Code requirements. Even though the hydraulic elevators travel relatively "short" distances, removal and replacement of the in-ground components can be very expensive. There are a lot of variables that cannot be determined until after the removal is completed and the existing well hole conditions can be evaluated for acceptance of the new, in-ground equipment. Potential risk is always a factor relating to water infiltration and or collapse of the well hole. If these unknown conditions can be corrected we advise an additional risk cost estimate of 35% added to elevator budget costs. In the case of FE19 & FE20, since most of the hydraulic jack components are exposed due to having walk in pits, the well hole cleaning and installation of the new components should be less complicated than if the jacks were buried in the ground.

Cab interior and car fixture upgrades were performed on passenger elevators PE1 – PE16 when the elevator controls were changed twenty-four (24) years ago. The fixtures utilize incandescent bulb technology. Ashland recommends that the operating fixtures be replaced and upgraded to LED type bulbs. This work, accompanied with cab interior upgrades, should be coordinated with the elevator control upgrades that have been recommended for completion within the next 1-2 years.

All pit ladders will require replacement in order to provide a "grab bar" at proper height; most do not have a grab bar at all. Pit lighting appears to be adequate and all pits were "dry" with little to no evidence of water/moisture intrusion. GFCI electrical outlets also need to be provided in each pit, as well. Cat walks will be required to inspect the pit buffers of each passenger elevator.

The sixteen (16) passenger elevators (PE1 – PE16) underwent complete cab interior upgrades approximately twenty four (24) years ago with applied panels with black reveals and brushed bronze accents. The cabs are heavily worn with chipping along the panel edges evident in most of the cabs. The freight elevator cabs of FE17, FE18, FE19 & FE20 are a typical freight cab design with steel walls and two rows of oak bumpers on the side and rear walls of each cab. The flooring is diamond plate which is showing wear from normal use. Ventilation of all cabs (Passenger & Freight) is achieved by a standard cab fan mounted on top of each elevator cab shell and appears to be adequate.

Each hydraulic elevator machine room location of FE19 & FE20 is on the "A" level of the underground parking garage with walk-in pit access.

SECTION I - EQUIPMENT EVALUATION

VERTICAL TRANSPORTATION SYSTEMS PROFILE

Building:
ORVILLE WRIGHT
(FAA)

				(CAFÉ)	
	PE1 - PE8	**PE9 - PE16**	**FE17 & FE18**	**FE19 & FE20**	**ESC1 – ESC6**
Capacity	3,500	3,500	6,000	5,000	300 lb./step
Loading (Passenger/Service/Freight)	Passenger	Passenger	Service	Service	Commercial
Rated Speed (feet per minute)	400	400	250	50	90
Roping	2 to 1	2 to 1	1 to 1	N/A	N/A
Floors Served	10	10	10	2	1 to A (Esc 1& Esc 2)
	12 (PE8)	12 (PE16)	12 (FE17)		A to B (Esc 3 & Esc 4
Floor Identification	1 - 10	1 - 10	1-10	1 - 2	1 to 2 (Esc 5 & Esc 6
	B,A, 1-10 (PE8)	B,A, 1-10 (PE16)	B,A, 1-10 (FE17)		
Machine Type:	OH Gearless	OH Gearless	OH Geared	Dry Pump	Chain Drive
Control Type:	Swift 5000	Swift 5000	MCE	MCE	Westinghouse
Sequence of Operation	8 car group	8 car group	Simplex	Simplex	Up or Down
Door Configuration	SSCO	SSCO	Power Bi-parting Freight	Power Bi-parting Freight	N/A
Car Door Operator	GAL MOD	GAL MOD	Curion	Curion	N/A
Operating/Signal Fixtures	Incandescent	Incandescent	Incandescent	Incandescent	Incandescent
Door Entrance Size	42" w X 84" h	42" w X 84" h	96" w X 96" h	96" w X 96" h	24” step width
Car & Cwt Buffers	Oil	Oil	Oil	Spring	N/A
Car & Cwt Safeties	Westinghouse	Westinghouse	Westinghouse	N/A	N/A
Overspeed Governor	Hollister Whitney	Hollister Whitney	Hollister Whitney	N/A	N/A
Power Supply	208V 3 PH	208V 3 PH	208V 3 PH	208V 3 PH	208V 3 PH
O.E. M.	Westinghouse	Westinghouse	Westinghouse	Westinghouse	Westinghouse
Date of Installation	1962	1962	1962	1962	1962
Modernization Contractor	Quality Elev	Quality Elev	Quality Elev	Quality Elev	N/A
Date of Modernization	1992	1992	1992	1992	N/A
Present Service Company	Century	Century	Century	Century	Century
3 or 5 Year Full Load Test	Feb 2012	Feb 2012	Feb 2012	No records	No Records
Annual Safety Inspections				No Records (FE19) July 2016 (FE20)	N/A

LIFE CYCLE ANALYSIS – TRACTION SYSTEMS

Elevator I.D.: PE1 – PE8, PE9 – PE16 Date: 10/18/16

Component/System	Projected Design Life (Years)	Present Age (Years)	Remaining Useful Life (Years)	Condition Comments	Recommended Action
MACHINE ROOM					
1. Hoisting Machinery, Sheaves & Bearing	50-75	54	0	Good	Test & Rebuild
2. Drive Motor(s)	50-75	54	0	Good	Test & Rebuild
3. Power Drives	30-50	24	6	**OBSOLETE**	Replace during mod
4. Signal Controls (Selectors)	20-25	24	0	**OBSOLETE**	Replace during mod
5. Motion Controls	20-25	24	0	**OBSOLETE**	Replace during mod
HOISTWAY AND PIT					
1. Wire Ropes (Hoist, Comp. & Governor)	20-25	24	0	Good	Replace during mod
2. Guide Rails	75+	54	21+	Good	Clean, Align, Tighten
3. Mechanical Safety Equipment & Counterweight	75+	54	21+	**OBSOLETE**	REPLACE DURING MOD
4. Hoistway Door Equipment	25-30	24	1	Fair	Replace during mod
CAR EQUIPMENT					
1. Car Door Equipment	20-25	24	0	Fair	Replace under mod
2. Cab Enclosure	20-30	24	0	Good	Replace during mod
3. Car Frame	75+	54	21+	Good	No Action Required
4. Car Safety	75+	54	21+	**OBSOLETE**	Replace during mod
OPERATING/SIGNAL EQUIPMENT					
1. Fixtures	20-25	24	0	**OBSOLETE**	Replace during mod

LIFE CYCLE ANALYSIS - TRACTION SYSTEMS

Elevator I.D.: FE17 & FE18 Date: 10/18/16

Component/System	Projected Design Life (Years)	Present Age (Years)	Remaining Useful Life (Years)	Condition Comments	Recommended Action
MACHINE ROOM					
1. Hoisting Machinery, Sheaves & Bearing	50-75	24	26	Good	Test & Rebuild
2. Drive Motor(s)	50-75	24	26	Good	Replace with AC motor under mod
3. Power Drives	30-50	24	4	**OBSOLETE**	Replace during mod
4. Signal Controls (Selectors)	20-25	24	0	**OBSOLETE**	Replace during mod
5. Motion Controls	20-25	24	0	**OBSOLETE**	Replace during mod
HOISTWAY AND PIT					
1. Wire Ropes (Hoist, Comp. & Governor)	20-25	24	0	Good	Replace under mod
2. Guide Rails	75+	54	21+	Good	Clean, Align, Tighten
3. Mechanical Safety Equipment & Counterweight	75+	54	21+	**OBSOLETE**	Replace during mod
4. Hoistway Door Equipment	25-30	24	1	Fair	Replace during mod
CAR EQUIPMENT					
1. Car Door Equipment	20-25	24	0	Fair	Replace under mod
2. Cab Enclosure	20-30	24	0	Good	Replace during mod
3. Car Frame	75+	54	21+	Good	No Action Required
4. Car Safety	75+	54	21+	**OBSOLETE**	Replace during mod
OPERATING/SIGNAL EQUIPMENT					
1. Fixtures	20-25	24	0	**OBSOLETE**	Replace during mod

LIFE CYCLE ANALYSIS – HYDRAULIC SYSTEM

Elevator I.D.: FE19 & FE20 Date: 10/18/16

Component/System	Projected Design Life (Years)	Present Age (Years)	Remaining Useful Life (Years)	Condition Comments	Recommended Action
MACHINE ROOM EQUIPMENT					
1. Tank and Pumping Unit	30 – 40	54	0	POOR	Replace during mod
2. External Piping	40 – 50	24	16	FAIR	Replace during mod
3. Signal Controls (Selectors)	20 - 25	24	0	**OBSOLETE**	Replace during mod
4. Manifold Control Valves	25 - 30	24	1	**OBSOLETE**	Replace during mod
HOISTWAY/PIT EQUIPMENT					
1. Guide Rails	75+	54	21+	Good	Clean, Align & Tighten
2. Cylinder –RAM	30 - 40	54	0	**OBSOLETE**	Single bottom jacks require replacement per Code
3. Hoistway Door Equipment	25 - 30	24	1	Fair	Replace during mod
4. Recovery System	20 - 25	N/A	N/A	N/A	5 Gallon run off bucket
CAR EQUIPMENT					
1. Car Frame	75+	54	21+	Good	No Action Required
2. Car Door Equipment	25 - 30	24	1	Fair	Replace during mod
3. Cab Enclosure	20 - 30	24	1	Fair	Replace during mod
OPERATING/SIGNAL EQUIPMENT					
1. Operating/Signal Fixtures	20 - 25	24	0	**OBSOLETE**	Replace during mod

CODES AND STANDARDS REVIEW – ELEVATORS ONLY

All elevators in the Orville Wright Building were upgraded in the early 1990's. The present components are a mixture of old (machine, motor, car, counterweight, pit equipment, fixtures) and new (controller, SCR drives and fixture components). The systems do not meet the latest code regulations in the following areas:

- Record Keeping - Data Tags / Testing Requirements
- Hydraulic Jack Assembly - Pre 1972 require replacement (PE19 & PE20)

Note: Annual safety inspections are overdue for all elevators in the building. Record keeping is not up to date.

Annual Safety Inspections (Cat 1) All test are performed at inspection speed with no load inside the elevator. Manually activate the safeties, governor, emergency final limits, over speed switch, door locks, gate switches, car door restrictors, stop switches and buffer switches. Activate Fireman's Service Phase I & II. Test emergency lighting / alarm / communications. Test the door protection devices and closing force. Unintended movement device is also verified.

3 year test (Cat 3 for hydraulic elevators): This type of testing only is required if the unit has a pressure vessel (hydraulic valve) as a means of propulsion. The pressure vessel must be charged at maximum pressure for 15 mins without changes to pressure. A visual inspection inside of the vessel is also performed.

5 year full-load (Cat 5): Same scope of work as the Cat 1 no load test. In addition, while elevator is operating at contract speed. Conduct a full load (elevator capacity) safety drop test, 125% capacity elevator brake test and a full load buffer test. Manually test the governor activation speeds and governor pull through.

What the 5 year test involves and what is expected at the end of the test? The elevator is loaded to maximum designed capacity and with the elevator traveling in the down direction; the speed governor is activated to put the elevator on emergency stop. The distance of slide on the main elevator rails is then measured for tolerance as well as the level of the elevator itself after the emergency brakes (safety) are applied and the car has come to a complete stop. After this is completed, the elevator is further tested in the down direction (under full load, contract speed) and strikes the elevator pit buffer. The elevator then is lifted, and the buffers (oil type) must return to original position within 90 secs. Additional weight is added (25% of capacity) to the cab. The elevator is tested again in the down direction and must stop within normal leveling tolerances between the car and hoistway entrance sills. All tests have specific tolerances set by ANSI A17.1 in relation to the elevator design; type, speed and capacity.

THE AMERICANS WITH DISABILITIES ACT (ADAAG)
SURVEY OF EXISTING ELEVATOR SYSTEMS

ELEVATOR(S) IDENTIFICATION: PE1 – PE8 & PE9 – PE16 **DATE:** October 12, 2016

Note: FE17, FE18, FE19 & FE20 are freight elevators with power operated bi-parting freight doors that are for freight and freight handlers only and as a result do not have to meet these requirements.

S = SATISFACTORY, U = UNSATISFACTORY, R = READILY ACHIEVABLE, NA = NOT APPLICABLE

A.D.A.AG SEC.	ITEM	TECHNICAL REQUIREMENTS	S	U	EXISTING CONDITION/ NOTES	R
4.10.1	General	A. Elevators shall comply with ASME/ANSI A17.1-1990, Safety Code for Elevators and Escalators.	X		Per 1992-1993 modernization.	
		B. Freight elevators shall not be considered as meeting the requirements of this section unless the only elevators provided are used as combination passenger and freight elevators for the public and employees.				
4.10.2	Automatic Operations	A. Elevator operation shall be automatic.	X			
		B. Each car shall have a self-leveling feature that will automatically bring the car to floor landing within a tolerance of ½" under rated loading and zero loading conditions.	X			
		C. This self-leveling feature shall be automatic and independent of the operating device and shall correct for undertravel and overtravel.	X			
4.10.3	Hall Call Buttons	A. Shall be centered at 42" above floor.	X			
		B. Shall have visual signals to indicate when call is registered and answered.	X			
		C. Minimum size 3/4" in the smallest dimension.	X			
		D. "UP" button shall be above "DOWN" button.	X			
		E. Buttons shall be raised or flush.	X			
		F. Objects mounted beneath buttons shall not project more than 4" from the wall.			N/A	

A.D.A.AG SEC.	ITEM	TECHNICAL REQUIREMENTS	S	U	EXISTING CONDITION/ NOTES	R
4.10.4	Hall Lanterns	A. A visible and audible signal shall be provided at each hoistway entrance to indicate which car is answering a call.	X			
		B. Audible signals shall sound once for "up", twice for "down", or shall have verbal annunciators that say "up" or "down".	X		Audible signals work sporadically	X
		C. Visible signals shall have the following features:				
		1. Fixtures shall be mounted with centerlines at least 72" above the lobby floor.	X			
		2. Visual elements shall be at least 2 ½" in the smallest dimension.	X			
		3. Signals shall be visible from the vicinity of the hall call button.	X			
		D. In-car lanterns, conforming to the above requirements, shall be acceptable.			N/A	
4.10.5 4.30.4	Characters On Hoistway Entrances	A. All elevator hoistway entrances shall have raised and Braille floor designations provided on both jambs.	X			
		B. Characters shall be centered 60" above finish floor.	X			
		C. Characters shall be 2" high, raised 1/32", upper case, sans serif or simple serif type, and shall be accompanied by Grade 2 Braille.	X			
4.10.6 4.16(3)(i)	Door Protective and Reopening Device	A. Elevator doors shall open and close automatically.	X			
		B. Door shall have a reopening device that will stop and reopen a car door if an object or person obstructs the door.				
		1. The device shall be capable of completing these operations without requiring contact for an obstruction passing through the opening at heights of 5" and 29" above finish floor.	X			
		2. Door reopening device shall remain effective for at least 20 seconds. After such interval, doors may close in accordance with ASME/ANSI A17.1-1990.Rule 112.4 and Rule 112.5 closing force provisions.	X			

A.D.A.AG SEC.	ITEM	TECHNICAL REQUIREMENTS	S	U	EXISTING CONDITION/ NOTES	R
4.10.7	Door and Signal Timing for Hall Calls	A. The minimum acceptable time from notification that a car is answering a call until doors begin to close shall be calculated as follows: - T = D/(1.5 ft/s) or T=D/(445 mm/s) - T = time in seconds - D = distance (in ft or mm) from point 60" directly in front of farthest call button to centerline of hoistway door. - The minimum acceptable notification time shall be 5 seconds.	X			
4.10.8	Door Delay for Car Calls	A. The minimum time for elevator doors to remain fully open in response to a call shall be 3 seconds.	X			
4.10.9 4.16(3)(ii)	Floor Plan of Elevator Cars	Shall provide for wheelchair users to enter the car, maneuver within reach of controls and exit the car. A. Door shall provide 36" clear minimum. B. Cab Depth: 51" minimum, with 54" minimum from rear of cab to inside face of door. C. Cab Width: side opening door - 68" minimum; Center opening door - 80" minimum. D. Clearance between car platform sill and edge of hoistway landing shall be 1 1/4" maximum. E. Alterations/Existing Condition: Where existing plan configuration or technical infeasibility prevent use of specified cab sizes, dimensions may be reduced as required. However, in no case shall the inside car dimensions be less than 48" by 48". F. Equivalent facilitation may be provided with a cab of different size when usability can be demonstrated and when all other items required to be accessible comply with this section.	X X X X		N/A N/A	

A.D.A.AG SEC.	ITEM	TECHNICAL REQUIREMENTS	S	U	EXISTING CONDITION/ NOTES	R
4.10.10	Floor Surfaces	A. Shall be firm, stable and slip-resistant	X			
		B. If carpet is used, it shall have the following features:			N/A	
		1. Shall be securely attached;				
		2. A firm cushion pad or backing (or none);				
		3. A level loop, textured loop, level cut pile or level cut/uncut pile texture;				
		4. Maximum pile thickness: ½”				
		5. Exposed edges fastened to floor surfaces with carpet edge trim.				
4.10.11	Illumination Levels	A. Illumination level at controls, platform and threshold and landing shall be minimum 5 footcandles.	X			
4.10.12 (1)	Car Controls: Buttons	A. Size 3/4" minimum in least dimension.	X			
		B. Buttons shall be raised or flush.	X			
4.10.12 (2)	Car Controls: Control Indicators	C. All control buttons shall be designated by Braille and by raised standard alphabet characters for letters, Arabic symbols for numerals, or standard symbols are required in ASME/ANSI 17.1-1990.	X			
		D. Characters shall be 5/8" to 2" high, raised 1/32", upper case, sans serif or simple serif type, and shall be accompanied by Grade 2 Braille.	X			
		E. All raised designations shall be immediately left of the button to which they apply.	X			
		F. Floor buttons shall be provided with visual signals which light when each call is registered and extinguish when each call is answered.	X			
4.10.12 (3)	Car Controls: Height	G. All floor buttons shall be maximum 54" above floor where side approach is provided, 48" maximum where forward approach is required.	X			
		H. Emergency controls (including alarm and stop) shall be grouped at bottom of panel, with centerlines 35" minimum above floor.	X			

A.D.A.AG SEC.	ITEM	TECHNICAL REQUIREMENTS	S	U	EXISTING CONDITION/ NOTES	R
4.10.12 (4)	Car Controls: Location	I. Controls shall be located on a front wall if cars have center opening doors and at either a side wall or the front wall if cars have side opening doors.	X			
4.10.13	Car Position Indicators	A. A visual car position indicator shall be provided above the car control panel or above the door.	X			
		B. As the car passes or stops at a floor, the corresponding numbers shall illuminate and an audible signal shall sound.	X			
		C. Numerals shall be a minimum of ½" high.	X			
		D. Audible signal shall be no less than 20 decibels with frequency no higher than 1500 Hz.	X			
		E. An automatic verbal announcement of the floor number may be substituted for the audible signal.			N/A	
4.10.14	Emergency Communic-ations	Emergency two-way communication system between the elevator and a point outside the hoistway shall comply with ASME/ANSI A17.1-1990				
		A. Highest operable part of system shall be maximum 48" from floor.	X			
		B. System shall be identified by raised symbol and lettering located adjacent to the device.	X			
		C. Characters shall be 5/8" to 2" high, raised 1/32", upper case, sans serif or simple serif type, and shall be accompanied by Grade 2 Braille.	X			
		D. If system uses a handset, minimum cord length shall be 29".	X			
		E. If located in a closed compartment, door shall be operable with one hand, shall not require tight grasping, pinching, or twisting of the wrist, and shall require a maximum force of 5 lbf.	X			
		F. The emergency communication system shall not require voice communication. (Voice only system is inaccessible to persons with speech or hearing impairments.)	X			

SECTION II - MAINTAINED CONDITION EVALUATION

ITEMIZED MAINTENANCE DEFICIENCIES

Machine Room: PE1 – PE8

1. Record keeping is not up to date. Provide maintenance and fireman's service testing records per Code.
2. Annual safety inspections are overdue, last performed July 2014.
3. Address access to secondary sheaves and over-speed governors in secondary area.
4. Provide auxiliary disconnects for each elevator where line of site is restricted from existing switch to machine, locate new switch in proximity of each machine/controller.
5. Remove peeling paint from machine room walls and test for lead content.
6. Remove old bolt attachments in machine room floor, represent a tripping hazard.

Machine Room: PE9 – PE16, FE17 & FE18

1. Record keeping is not up to date. Provide maintenance and fireman's service testing records per Code.
2. Annual safety inspections are overdue, last performed July 2014.
3. Address access to secondary sheaves and over-speed governors in secondary area.
4. Provide auxiliary disconnects for each elevator where line of site is restricted from existing switch to machine, locate new switch in proximity of each machine/controller.
5. Repair water intrusion from roof area drain in machine room ceiling.

Hydraulic Elevators: FE19 & FE20

1. Remove oil dry material from machine room floor and repair leak. (FE19)
2. Replace single bottom hydraulic jack assembly, installed pre 1972.
3. Annual safety inspections are overdue, last performed in December 2014 (FE19).
4. PE20 control valve was replaced 3 months ago and needs to have inspection/testing tag updated to reflect that the test was completed in July 2016.

General Observations:

1. Adjust door open limit (DOL) switch to obtain full open position of hoistway and car doors when car is at each landing.
2. Adjust floor annunciator inside elevator cab of PE12, very loud.
3. PE2 was out of service during our visit, waiting for replacement parts. Obtain parts as soon as possible to return unit to service.
4. Replace incandescent bulbs, as needed.
5. Clean car and hoistway sills of dirt & debris.
6. Replace car door gibs, as needed.
7. Replace pit buffer equipment due to water exposure (FE18).
8. Cab interior applied panels of passenger elevators are heavily worn due to normal use and should be replaced during next modernization cycle.
9. Repair hall station position indicators, missing segments and blurry numbers (FE17)

10. Investigate and repair end bell bearing noises emanating from gearless machine during normal operation.
11. Correct elevator emergency phone static (FE19)
12. Repair several emergency lights in main car operation panels (PE9, PE10 & PE11)
13. Replace missing solid card gate bumpers on bottom blade of gate (FE18)
14. Walk-in pit door does lock (FE18)
15. Repair hoistway lighting (PE5, PE6 & PE7)
16. Monitor hoist ropes for loss of diameter due to evidence of rouge and schedule for replacement (PE10)

MAINTENANCE CONTRACT REVIEW

Current Contract Provisions:

THESE DOCUMENTS HAVE NOT BEEN PROVIDED TO ASHLAND INDUSTRIAL SERVICES

Recommendations:

RECORDED OPERATING PERFORMANCE

WEST LOBBY

SINGLE SPEED CENTER OPENING DOORS (42” wide)	ELEV. NO. PE1	ELEV. NO. PE2	ELEV. NO. PE3	ELEV. NO. PE4	ACCEPTABLE STANDARDS FOR THIS EQUIPMENT
A. SPEED - UP DIRECTION (FPM)	399	N/O	389	395	380 – 420
B. SPEED – DOWN DIRECTION (FPM)	400	N/O	386	397	380 – 420
C. DOOR OPENING TIME (SEC)	**1.9***	N/O	1.7	**2.1***	1.4 – 1.6
D. DOOR CLOSING TIME (SEC)	**3.4***	N/O	**4.9***	**3.2***	2.8 – 3.0
E. DOOR OPEN DURATION - CAR CALL (SEC)	**1.9***	N/O	**1.8***	**1.8***	3.0 Minimum
F. DOOR OPEN DURATION - HALL CALL (SEC)	5.9	N/O	6.1	5.8	5.0 Minimum
G. DOOR OPEN DURATION - AFTER PROTECTIVE SHIELD IS RE-ESTABLISHED (SEC)	**2.3***	N/O	**2.1***	**2.1***	.5 to 1.0
H. FLOOR TO FLOOR PERFORMANCE TIME (SEC)	10.9	N/O	12.3	11.2	11.5 – 12.5
I. START (milli g) Up/Down	42/63	N/O	52/53	92/90	
J. ACCEL (milli g) Up/Down	62/64	N/O	61/62	91/90	
K. DECEL (milli g) Up/Down	71/80	N/O	63/60	105/103	
L. STOP (milli g) Up/Down	32/31	N/O	30/22	41/42	
M. JERK (milli g) Up/Down	5.0/6.9	N/O	4.6/5.7	7.2/7.1	15.0 max
N. STOPPING ACCURACY (INCHES)	1/4	N/O	1/4	1/4	± ½
O. CAR DOOR CLOSING PRESSURE (LBS)	25	N/O	20	22	30 Maximum

***** DENOTES UNACCEPTABLE CONDITION BASED ON STANDARDS SPECIFIED.

N/E - denotes "No Evaluation" of referenced standard performed.

N/A - denotes standard is "Not Applicable" to these systems.

N/O - denotes "Not Operative" at time of evaluation.

RECORDED OPERATING PERFORMANCE

WEST LOBBY

SINGLE SPEED CENTER OPENING DOORS (42" wide)	ELEV. NO. PE5	ELEV. NO. PE6	ELEV. NO. PE7	ELEV. NO. PE8	ACCEPTABLE STANDARDS FOR THIS EQUIPMENT
A. SPEED - UP DIRECTION (FPM)	394	401	390	393	380 – 420
B. SPEED – DOWN DIRECTION (FPM)	393	403	393	393	380 – 420
C. DOOR OPENING TIME (SEC)	**1.9***	**2.7***	1.5	1.6	1.4 – 1.6
D. DOOR CLOSING TIME (SEC)	3.1	3.0	**3.3***	2.8	2.8 – 3.0
E. DOOR OPEN DURATION - CAR CALL (SEC)	**1.7***	**1.5***	**1.7***	2.1	3.0 Minimum
F. DOOR OPEN DURATION - HALL CALL (SEC)	6.0	6.2	6.7	7.0	5.0 Minimum
G. DOOR OPEN DURATION - AFTER PROTECTIVE SHIELD IS RE-ESTABLISHED (SEC)	**1.5***	**1.6***	**2.1***	**2.1***	.5 to 1.0
H. FLOOR TO FLOOR PERFORMANCE TIME (SEC)	**13.2***	10.5	11.1	11.2	11.5 – 12.5
I. START (milli g) Up/Down	22/31	60/63	61/55	55/105	
J. ACCEL (milli g) Up/Down	72/72	70/71	87/92	62/104	
K. DECEL (milli g) Up/Down	80/83	73/92	83/91	82/82	
L. STOP (milli g) Up/Down	31/32	32/42	42/42	41/43	
M. JERK (milli g) Up/Down	5.5/7.5	7.9/4.7	5.9/9.7	5.8/13.7	15.0 max
N. STOPPING ACCURACY (INCHES)	1/4	1/4	1/4	1/4	± ½
O. CAR DOOR CLOSING PRESSURE (LBS)	20	20	24	23	30 Maximum

***** DENOTES UNACCEPTABLE CONDITION BASED ON STANDARDS SPECIFIED.

N/E - denotes "No Evaluation" of referenced standard performed.

N/A - denotes standard is "Not Applicable" to these systems.

N/O - denotes "Not Operative" at time of evaluation.

RECORDED OPERATING PERFORMANCE

EAST LOBBY

SINGLE SPEED CENTER OPENING DOORS (42" wide)	ELEV. NO. PE9	ELEV. NO. PE10	ELEV. NO. PE11	ELEV. NO. PE12	ACCEPTABLE STANDARDS FOR THIS EQUIPMENT
A. SPEED - UP DIRECTION (FPM)	392	391	381	391	380 – 420
B. SPEED – DOWN DIRECTION (FPM)	392	390	396	391	380 – 420
C. DOOR OPENING TIME (SEC)	**2.5***	1.7	1.7	**2.0***	1.4 – 1.6
D. DOOR CLOSING TIME (SEC)	**3.5***	2.4	2.7	2.6	2.8 – 3.0
E. DOOR OPEN DURATION - CAR CALL (SEC)	**2.0***	**2.0***	**1.9***	**1.8***	3.0 Minimum
F. DOOR OPEN DURATION - HALL CALL (SEC)	8.9	9.0	9.2	8.7	5.0 Minimum
G. DOOR OPEN DURATION - AFTER PROTECTIVE SHIELD IS RE-ESTABLISHED (SEC)	**3.0***	**2.5***	**2.9***	**2.6***	.5 to 1.0
H. FLOOR TO FLOOR PERFORMANCE TIME (SEC)	12.6	10.9	10.9	**13.5***	11.5 – 12.5
I. START (milli g) Up/Down	101/96	70/66	50/44	51/49	
J. ACCEL (milli g) Up/Down	82/87	60/64	57/57	66/66	
K. DECEL (milli g) Up/Down	68/69	57/56	62/62	81/77	
L. STOP (milli g) Up/Down	30/30	26/26	27/27	27/28	
M. JERK (milli g) Up/Down	6.9/15.5	4.2/10.3	3.6/5.0	5.4/6.1	15.0 max
N. STOPPING ACCURACY (INCHES)	1/4	1/4	1/4	1/4	± ½
O. CAR DOOR CLOSING PRESSURE (LBS)	22	24	**30+***	26	30 Maximum

***** DENOTES UNACCEPTABLE CONDITION BASED ON STANDARDS SPECIFIED.

N/E - denotes "No Evaluation" of referenced standard performed.

N/A - denotes standard is "Not Applicable" to these systems.

N/O - denotes "Not Operative" at time of evaluation.

RECORDED OPERATING PERFORMANCE

EAST LOBBY

SINGLE SPEED CENTER OPENING DOORS (42" wide)	ELEV. NO. PE13	ELEV. NO. PE14	ELEV. NO. PE15	ELEV. NO. PE16	ACCEPTABLE STANDARDS FOR THIS EQUIPMENT
A. SPEED - UP DIRECTION (FPM)	402	399	403	400	380 – 420
B. SPEED – DOWN DIRECTION (FPM)	404	399	402	395	380 – 420
C. DOOR OPENING TIME (SEC)	**1.8***	1.7	**2.2***	**2.3***	1.4 – 1.6
D. DOOR CLOSING TIME (SEC)	2.9	2.6	2.8	2.8	2.8 – 3.0
E. DOOR OPEN DURATION - CAR CALL (SEC)	**1.9***	**2.0***	**2.8***	**3.1***	3.0 to 5.0
F. DOOR OPEN DURATION - HALL CALL (SEC)	8.2	8.5	8.0	5.0	5.0 to 8.0
G. DOOR OPEN DURATION - AFTER PROTECTIVE SHIELD IS RE-ESTABLISHED (SEC)	**2.5***	**2.7***	**2.6***	.6	.5 to 1.0
H. FLOOR TO FLOOR PERFORMANCE TIME (SEC)	10.7	9.8	10.8	10.4	11.5 – 12.5
I. START (milli g) Up/Down	61/71	58/83	80/66	80/73	
J. ACCEL (milli g) Up/Down	67/72	77/88	56/66	68/74	
K. DECEL (milli g) Up/Down	76/77	98/104	53/52	78/79	
L. STOP (milli g) Up/Down	32/30	38/42	23/22	33/31	
M. JERK (milli g) Up/Down	4.9/7.9	6.5/9.1	6.8/8.7	5.8/8.5	15.0 max
N. STOPPING ACCURACY (INCHES)	1/4	1/4	1/4	1/4	± ½
O. CAR DOOR CLOSING PRESSURE (LBS)	24	24	23	26	30 Maximum

***** DENOTES UNACCEPTABLE CONDITION BASED ON STANDARDS SPECIFIED.

N/E - denotes "No Evaluation" of referenced standard performed.

N/A - denotes standard is "Not Applicable" to these systems.

N/O - denotes "Not Operative" at time of evaluation.

DEFINITIONS AND MEASUREMENTS

OF ITEMS LISTED IN

RECORDED OPERATING PERFORMANCE

A&B. **Speed** is the rate at which the measured unit travels. The speed has been measured during a complete run of the unit and was taken as the highest sustained value recorded using a hand held tachometer.

C. **Door Opening Time** is defined as the start of car doors opening until they are fully opened. The time was measured in seconds from the moment the car doors start to open until the car doors are fully open (i.e., motion stops).

D. **Door Closing Time** is defined as the start of the car doors closing until fully closed. The time was measured in seconds from the moment the car doors start to close until the car doors are fully closed (i.e., motion stops).

E. **Door Open Duration for a Car Call** is defined as the length of time the car doors remain fully open in response to a car call without anyone passing through the protective shield. This time was measured in seconds from the stop in the open motion of the car doors until the start of the closing motion of the car door.

F. **Door Open Duration for a Hall Call** is defined as the length of time the car doors remain fully open in response to a lobby call without anyone passing through the protective shield. This time was measured in seconds from the stop in the open motion of the car doors until the start of the closing motion of the car doors.

G. **Door Open Duration After Protective Shield is Re-Established** is defined as the length of time the car doors remain open after an object has passed through the protective shield until the car doors begin to close. This time was measured in seconds from the stop in the motion of the car doors until the re-start of the closing motion of the car doors.

H. **Floor to Floor Performance Time** is defined as the time required for the movement of a car between two (2) floors, including the door closing and effective door opening for passenger transfer. The time was measured in seconds from the start of door closing at one floor until the car was stopped (within stopping accuracy) at the next floor with the doors opened for passenger transfer.

I. **Start Up/Down (milli g)** is measured at the beginning of car motion.

J. **Accel Up/Down (milli g)** is the measure of acceleration immediately after the Start measure.

K. **Decel Up/Down (milli g)** is the measure of transition from high speed to leveling speed or stop.

L. **Stop Up/Down (milli g)** is measure of the stopping rate to the floor level.

M. **Jerk Up/Down (milli g)** is a term used to describe a change in acceleration. In mathematical terms one jerk is equal to a change in acceleration of one foot per second per second, in one second of time. One jerk equals a rate change of .03108 g's in one second. Optimal jerk rate is 15.0 or less.

N. **Stopping Accuracy** is the distance between the car and hoistway sills when the car is stopped at a floor and was measured as the vertical distance (in inches) between the horizontal planes of the car and hoistway sills when the car is stopped at a floor.

O. **Car Door Closing Pressure** is the amount of force required to hold a door from closing after stalling the door, by external means, at about 1/3 of the closing distance. The door pressure was measured in pounds and was recorded upon removal of the physical block.

SECTION III – SCOPE, BUDGET COSTS & PRIORITIES

Design Intent

As part of Ashland's recommendations for upgrades, modernization and/or refurbishment of the elevator equipment, the elevator equipment rooms/spaces have been evaluated, including components such as lighting, HVAC, fire protection, emergency power interface, enclosures, etc. The scope of work for each grouping of elevators requires that the elevator systems and areas comply with GSA Standards / Guidelines / Alerts and all current Codes. The design will bring the elevators up to the latest editions of ASME A17.1 Safety Code for Elevators and Escalators, A17.3 Safety Code for Existing Elevators and Escalators, A18.1 Safety Standard for Platform Lifts and Stairway Chairlifts, ANPA 70 National Electric Code and NFPA 101 life safety codes. Adding remote monitoring capabilities is also recommended. Remote monitoring is recommended to be placed in the Facilities Management Office and not the elevator machine room, elevator shop or any off site locations.

Passenger Elevators PE1 – PE16

Rebuild the Westinghouse overhead gearless traction machines, modify deflector sheaves, provide new elevator controllers with SCR drives, install "rope gripper" for unintended movement, provide new hoist and governor ropes, new hoistway wiring and traveling cables, new car and counterweight roller guides, new hoistway door tracks, hangers, rollers and safety interlocks, new car door operator (closed loop), new car door panels and ventilation, new car top inspection station, new hall and car operating fixtures with LED lamps, new car and counterweight safeties, paint entrance frames, new electronic door edge detector, new cab interior applied panels, lighting and flooring. Retain car and counterweight guide rails, refurbish compensation sheaves and governor cable tension assembly, clean hoistway entrance sills and car sill, refurbish hoistway door panels, retain car frame and platform, modify lobby control panel.

Budget Cost per elevator: $465,090 x 16 elevators = $7,441,440 (FY 2017 dollars)

Building related work will be required as follows: Replace main power supply and distribution panel in its entirety, replace all circuit control devices with new components, make all elevator control connections to emergency power transfer switch and lobby control station,, refurbish machine room and secondary area lighting, install access doors and catwalk for secondary areas, provide new HVAC unit(s) in elevator machine rooms, provide new pit and hoistway lighting and modify pit access. Paint machine rooms and hoistways as required. Repair roof drains and test/abate machine room areas as needed.
Note: All building related work shall be completed during Phase 1 (first 4 cars) of each 8 car elevator group modernization.

Budget Cost per Building Related Work: $487,890 x 2 machine rooms = $975,780 (FY 2017 dollars)

Total Budget Cost for PE1 – PE16 and Building Related Work: $8,417,220 (FY 2017 dollars)

Freight Elevators FE17 – FE18

Rebuild the Hollister-Whitney overhead geared traction machines, provide A/C drive motors, provide new elevator controllers with VVVF drives, install "rope gripper" for unintended movement, provide new hoist and governor ropes, new hoistway wiring and traveling cables, new car and counterweight roller guides, modify entrance frames, new hoistway door panel operating equipment, modify existing door panels, modify door tracks and provide new safety interlocks, new car gate motor and related equipment, new car gates, new car ventilation, new car top inspection station, new hall and car operating fixtures with LED lamps, new car safeties, paint entrance frames, new electronic gate edge detector, new cab enclosure with side wall bumpers and new cab lighting and diamond plate flooring. Provide new pit buffers and related equipment, new compensation chains (whisper flex), new governor tail sheave assembly. Retain car and counterweight guide rails, refurbish deflector sheaves and governor cable tension assembly, clean hoistway entrance sills, refurbish hoistway door panels, retain car frame and platform, provide new lobby control panel and auxiliary panels.

Budget Cost per elevator: $755,310 x 2 elevators = $1,510,620 (FY 2017 dollars)

Building related work will be required as follows: Replace main power supply and distribution panel in its entirety, replace all circuit control devices with new components, make all elevator control connections to emergency power transfer switch and lobby control station, refurbish fire controls, provide new HVAC unit(s) in elevator machine room, provide new pit, machine room and hoistway lighting and modify general space conditions in machine room. Paint machine rooms and hoistways as required.

Budget Cost for Building Related Work: $218,000 (FY 2017 dollars)

Total Budget Cost for FE17 & FE18 and Building Related Work: $1,728,620 (FY 2017 dollars)

Freight Elevator FE19 & FE20

Provide new pump unit and valve controls. Provide new drive motor and elevator controller. Replace in-ground hydraulic jack components and related pit equipment. Provide new hoistway wiring and traveling cables, new car guide assemblies, modify entrance frames, new hoistway door panel operating equipment, modify existing door panels, modify door tracks and provide new safety interlocks, new car gate motor and related equipment, new car gates, new car ventilation, new car top inspection station, new cab enclosure, lighting, ventilation, flooring, new hall and car operating fixtures with LED type lamps.

Budget Cost: $446,640 x 2 elevators = $893,280 (FY 2017 dollars)

Building related work will be required as follows: Refurbish main power supply and replace emergency power panel, refurbish fire controls, provide new HVAC unit in elevator machine room, provide new pit, machine room and hoistway lighting and modify machine room access. Paint machine rooms and hoistways as required.

Budget Cost for Building Related Work: $145,042 x 2 machine rooms = $290,084 (FY 2017 dollars)

Total Budget Cost for FE19 & FE20 and Building Related Work: $1,183,364 (FY 2017 dollars)

Escalators ESC 1 – ESC 6

Remove Westinghouse escalators and replace with same design within existing steel truss.
Budget Cost per escalator: $388,050 x 6 escalators = $2,328,300 (FY 2017 dollars)
Building related work is inclusive of the budget cost per escalator.

Total for ESC 1 – ESC 6: $2,328,300 (FY 2017 dollars)

GRAND TOTAL: $13,657,504 (FY 2017 dollars)

SECTION IV – PHOTOGRAPHS, SCHEDULE & KEY PLAN

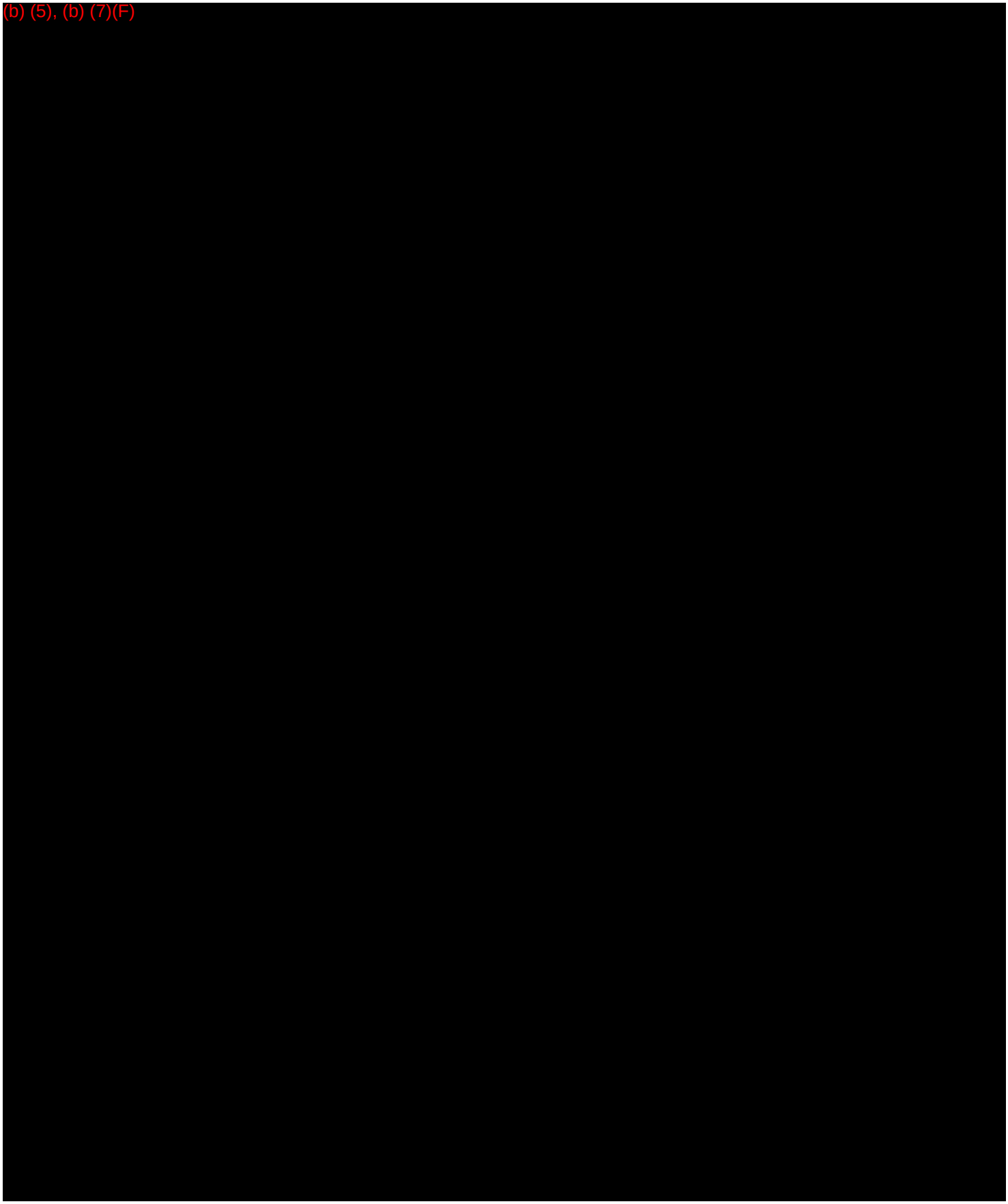
See Attachments A, B & C

ATTACHMENT A

(b) (5), (b) (7)(F)

[redacted]

(b) (5), (b) (7)(F)



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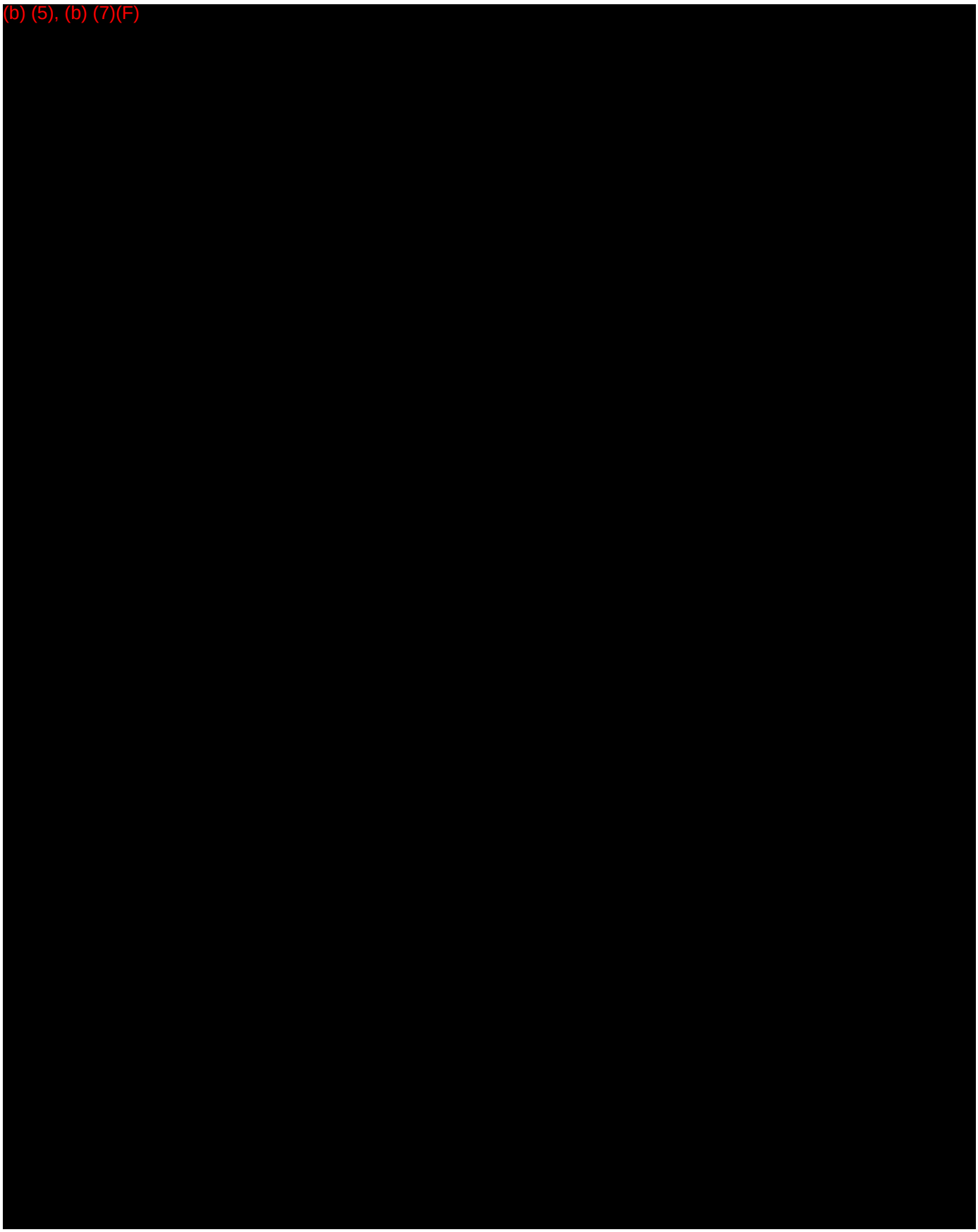

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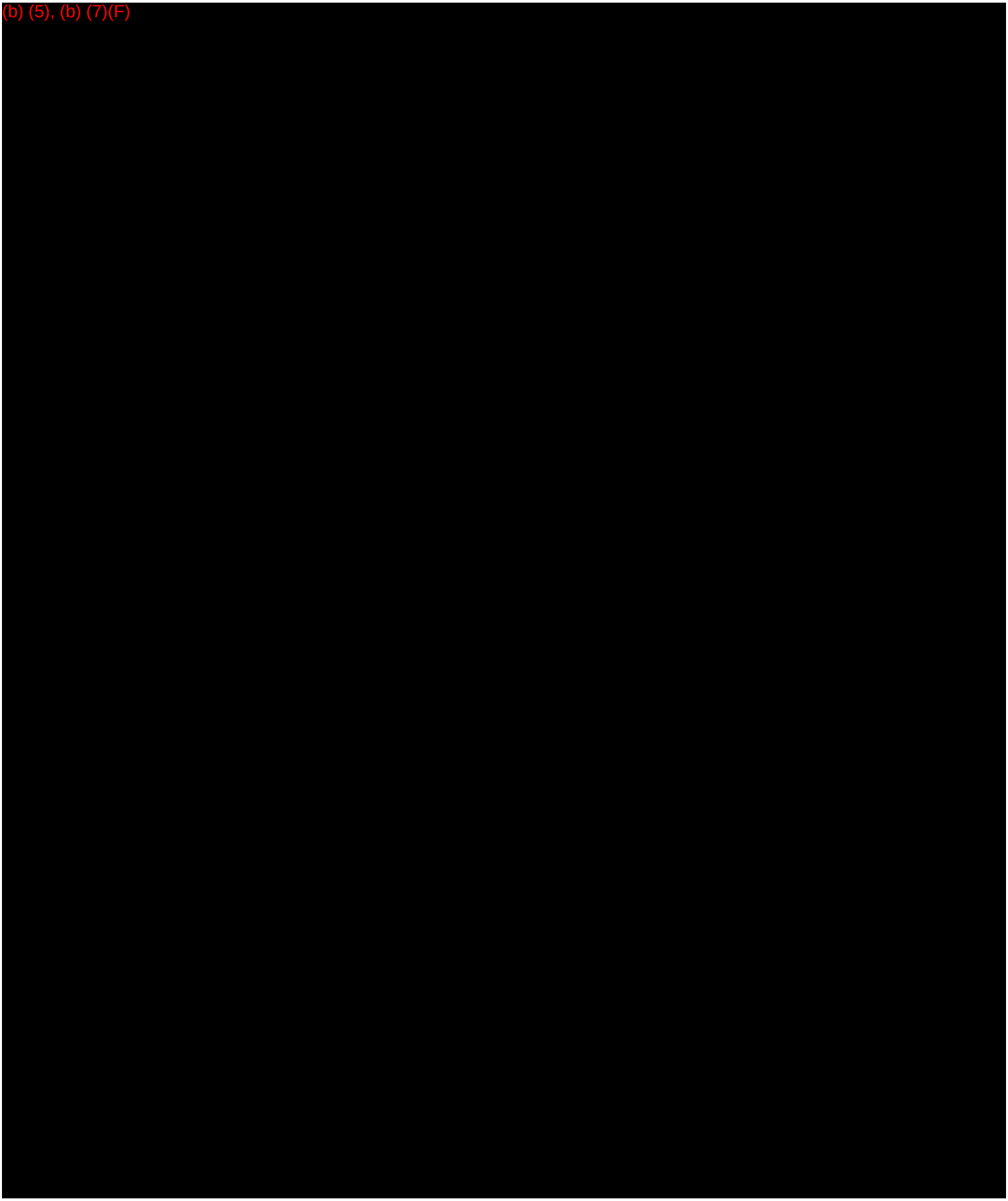

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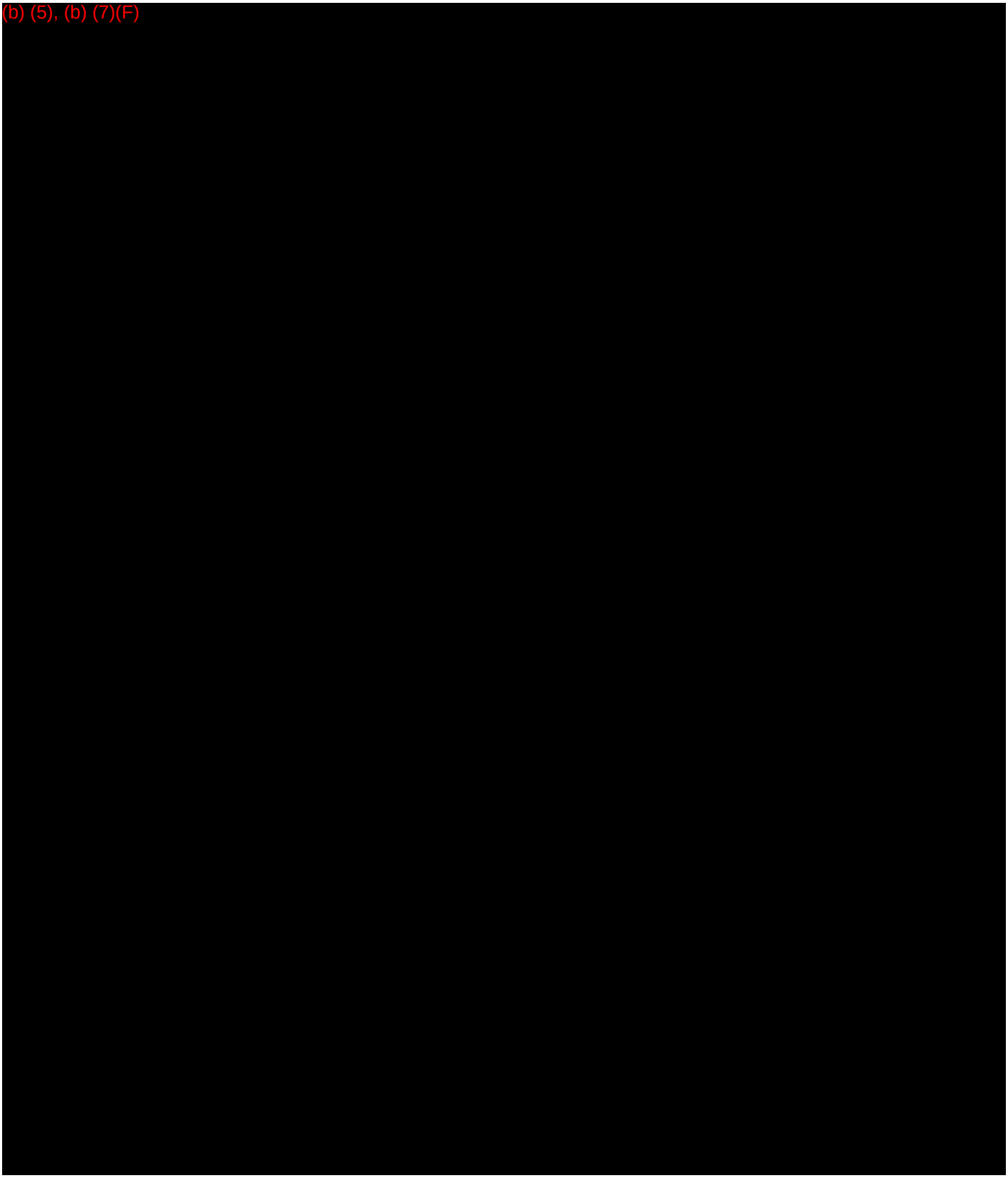

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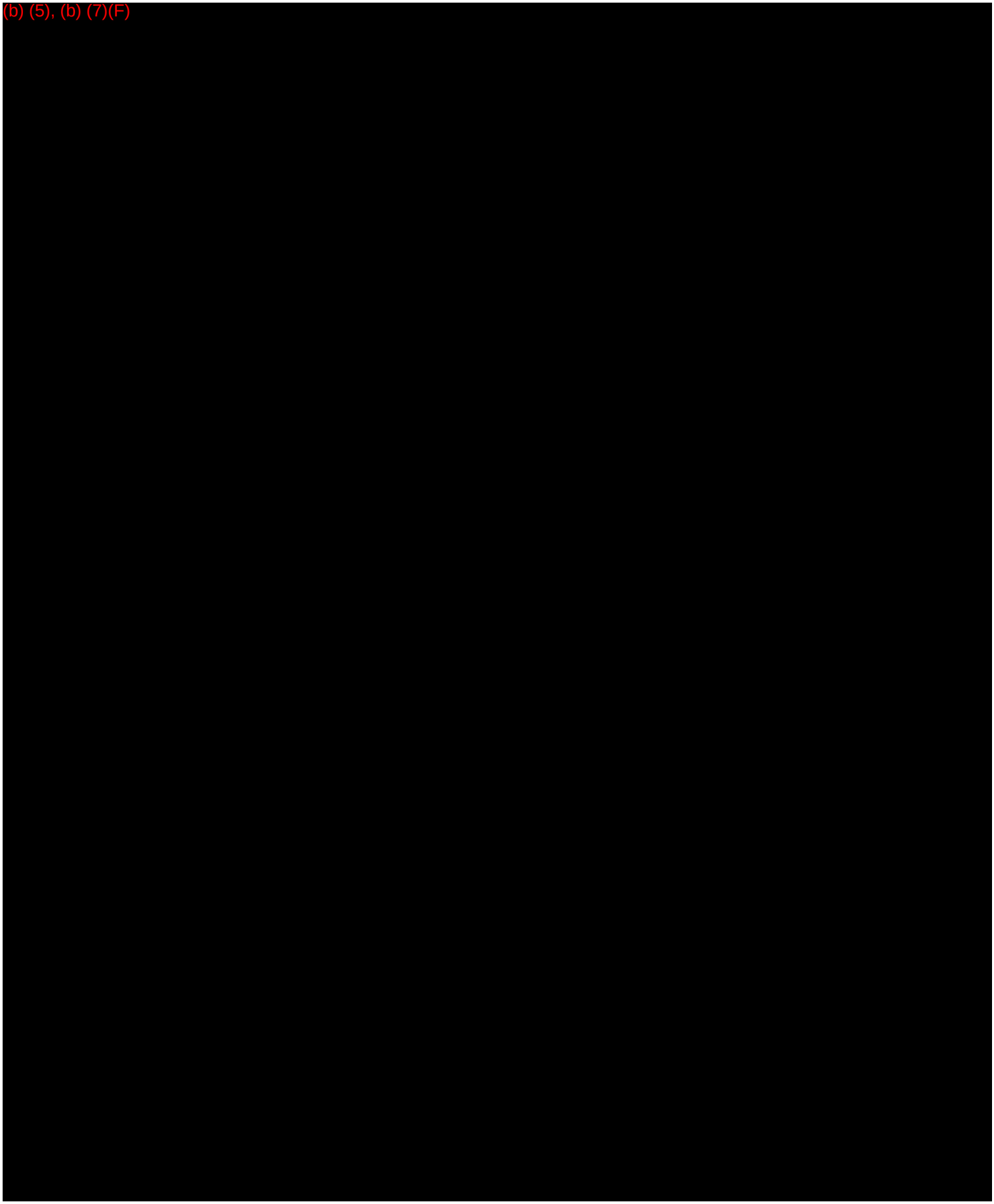

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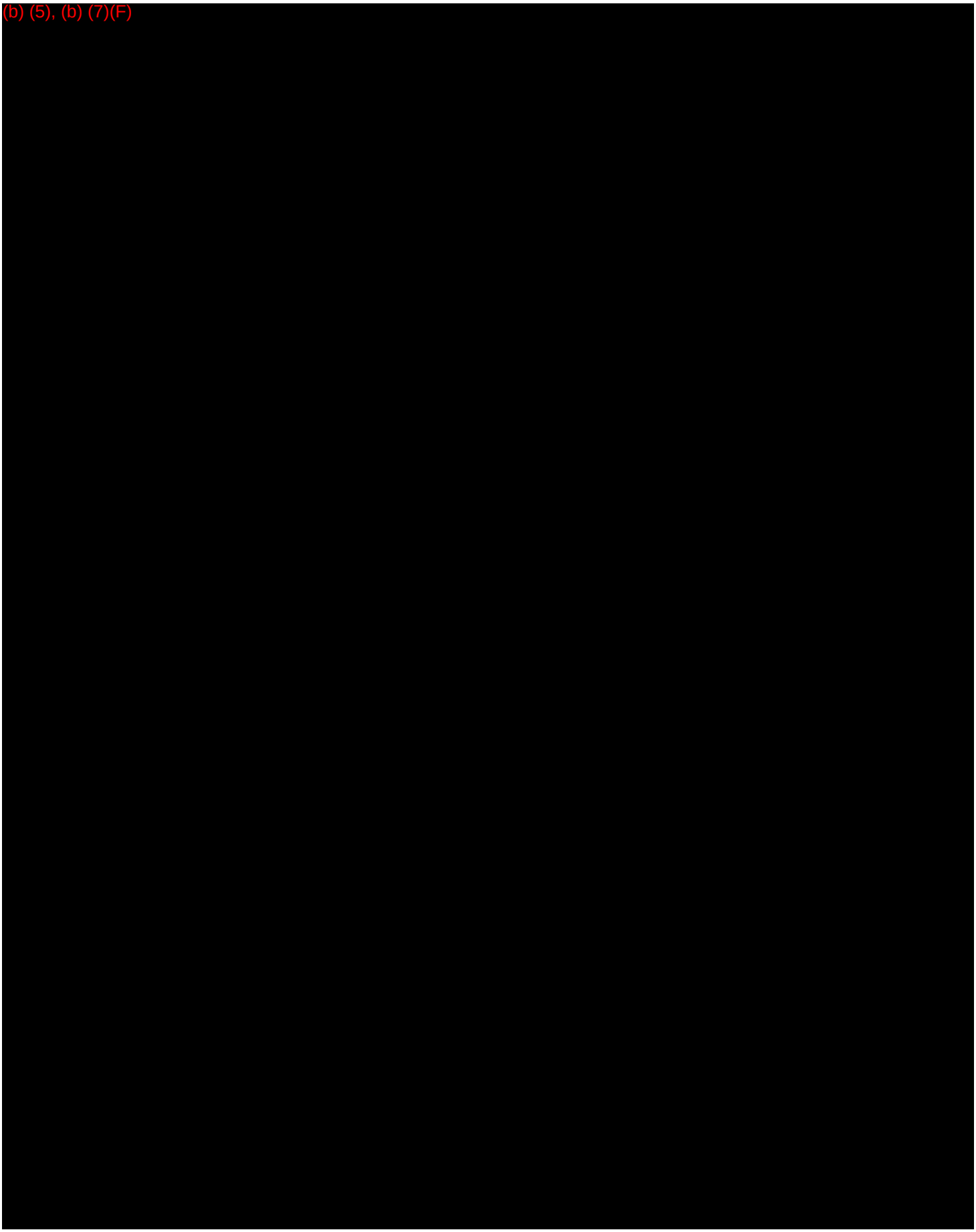

(b) (5), (b) (7)(F)

Orville Wright (FAA) DC0083ZZ
Elevator Modernization Schedule

	Year 1												Year 2											
Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
FE19	■	■																						
FE20			■	■																				
PE1 - PE4					■	■	■	■	■															
PE5 - PE8										■	■	■	■	■										
PE9 - PE12															■	■	■	■	■					
PE13 - PE16																				■	■	■	■	■
Esc 1 & 2	■	■	■	■																				
Esc 3 & 4					■	■	■	■																
Esc 5 & 6									■	■	■	■												

	Year 3											
Month	25	26	27	28	29	30	31	32	33	34	35	36
FE17	■	■	■	■	■	■						
FE18							■	■	■	■	■	■

(b) (5), (b) (7)(F)

[redacted]

TOTAL FAA OFFICE SPACE 17,244 SF
TOTAL FAA ASSIGNED SPACE 11,088 SF
TOTAL FAA SPECIAL SPACE 6,105 SF

TO C STREET

N

DRAWN	
REVIEWED	
RECVD	
APPRVD	
REVISION:	
UPDATED	08/01/2008
BY	Vanesha Frazier
PROJECT	MASTER
FILE	1-FLOOR.DWG

FEDERAL AVIATION ADMINISTRATION

DEPARTMENT OF TRANSPORTATION
800 INDEPENDENCE AVE., SW
WASHINGTON, DC 20590

1ST FLOOR

CONTRACT	1024-01	DWG	P:\PROJECTS\MASTER\1-FLOOR.DWG
SCALE	1/16" 1	SHEET	1 OF 1
		DATE	Aug 01, 2008